

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A component of a plasma processing apparatus, comprising:

a graphite backing plate bonded to a silicon showerhead electrode, the backing plate including a plurality of through apertures having a first portion and a second portion wider than the first portion; and

a plurality of first fastener members each mounted in an aperture of the backing plate, each first fastener member including a non-circular shaped head configured to prevent rotation of the first fastener members relative to the backing plate, the head having a bearing surface ~~faeing~~ bonded to a surface that at least partially defines the second portion of the aperture.

2. (Previously Presented) The component of Claim 1, wherein the first fastener members are T-nuts having a T-shape and internal threads.

3. (Previously Presented) The component of Claim 1, wherein the surface that at least partially defines the second portion of the aperture is a second bearing surface and the bearing surface of each of the first fastener members is bonded with an elastomer to the second bearing surface.

4. (Previously Presented) The component of Claim 1, further comprising:
a temperature-controlled top plate on the backing plate, adjacent the first portion of the apertures of the backing plate, and including a plurality of through openings each aligned with a respective aperture in the backing plate; and
a plurality of second fastener members each engaged with a respective first fastener member to secure the backing plate to the top plate.

5. (Original) The component of Claim 1, wherein each of the first fastener members comprises a rectangular shaped head.

6-7. (Cancelled)

8. (Currently Amended) The component of Claim 1, wherein the showerhead electrode comprises an inner silicon electrode and ~~a segmented~~ an outer silicon electrode, and the graphite backing plate is secured to the inner silicon electrode and a graphite backing ring is secured to the outer silicon electrode.

9. (Original) The component of Claim 4, wherein (i) each of the first fastener members comprises internal threads, and each of the second fastener members comprises external threads engaged with the internal threads of a respective first fastener member, or (ii) each of the first fastener members comprises external threads, and each of the second fastener members comprises internal threads engaged with the external threads of a respective first fastener member.

10. (Currently Amended) A component of a plasma processing apparatus, comprising:

a showerhead electrode including an attachment surface and an exposed surface adapted to be exposed to an interior of a plasma processing chamber;

a backing plate including a first surface spaced from a second surface, the first ~~second~~ surface contacting and being bonded to the attachment surface of the showerhead electrode, the backing plate including axially extending apertures extending between the first surface and the second surface, each of the apertures including a first portion opening in the first surface and a second portion opening in the second surface, the first ~~second~~ portion being wider in a transverse direction than the ~~second~~ first portion; and

T-nuts having a T-shape, the second portions and the T-nuts having matching shapes which prevents rotation of the T-nuts located in the second portions of the apertures.

11. (Currently Amended) The component of Claim 10, further comprising:
a temperature-controlled top plate adjacent the ~~second~~ first surface of the backing plate and including through openings aligned with the apertures in the backing plate; and

~~connectors~~ fastener members located in the openings, the ~~connectors~~ fastener members being detachably engaged with the T-nuts such that the top plate is detachable from the backing plate.

12. (Cancelled)

13. (Currently Amended) The component of Claim 11, wherein the ~~connectors~~ fastener members include external threads.

14. (Previously Presented) The component of Claim 10, wherein the second portions of the apertures comprise at least one load-bearing surface extending in the transverse direction, and the T-nuts comprise at least one surface bonded to the load-bearing surface.

15. (Cancelled)

16. (Previously Presented) The component of Claim 11, wherein the first portions of the apertures are round holes having diameters larger than diameters of openings in the top plate.

17. (Currently Amended) A showerhead electrode assembly for a plasma processing apparatus, comprising:

a silicon showerhead electrode having gas injection openings and a plasma exposed surface;

a graphite backing member secured to the silicon showerhead electrode, the backing member including a plurality of through apertures each having a first portion and a second portion wider than the first portion;

a top plate including a plurality of through openings each of which is aligned with a respective aperture in the backing member;

a plurality of T-nuts having a T-shape, each T-nut being mounted in a respective aperture of the backing member, each T-nut including a bearing surface

facing bonded to a surface at least partially defining the second portion of the apertures; and

a second fastener member engaged with each T-nut to secure the backing member to the top plate.

18. (Previously Presented) The showerhead electrode assembly of Claim 17, wherein the head of each of the T-nuts comprises a bearing surface adhesively bonded to the bearing surface of the aperture.

19. (Currently Amended) The showerhead electrode assembly of Claim 17, wherein the T-nuts and second portions have matching shapes and the second portion of each aperture is configured to prevent rotation of the T-nut relative to the backing member.

20. (Currently Amended) The showerhead electrode assembly of Claim 17, wherein the silicon showerhead electrode comprises an inner member and a segmented an outer member, and the backing member comprises a backing plate secured to the inner member and a backing ring secured to the outer member.

21. (Previously Presented) The showerhead electrode assembly of Claim 17, wherein (i) each of the T-nuts comprises internal threads, and each of the second fastener members comprises external threads engaged with the internal threads of a respective T-nut.

22-28. (Cancelled)

29. (Previously Presented) The showerhead electrode assembly of Claim 17, wherein the top plate is on the backing member, adjacent the first portion of the apertures of the backing member, and temperature-controlled.

30. (Previously Presented) The showerhead electrode assembly of Claim 17, wherein the backing member comprises a first surface and a second surface opposite the first surface, the first surface is secured to the silicon showerhead electrode and the second surface is secured to the top plate.

31. (Previously Presented) The component of Claim 1, wherein each first fastener member includes a cylindrical shaped shaft extending axially from the bearing surface of the head and received in a round hole defined by the first portion of the aperture, and the second portion of each of the apertures is shaped to mate with the head of the first fastener member mounted in the aperture.

32. (Previously Presented) The component of Claim 31, wherein the surface that at least partially defines the second portion of the aperture is a second bearing surface bonded with an elastomer to the bearing surface of each of the first fastener members.

33. (Previously Presented) The component of Claim 1, wherein:
the graphite backing plate includes a bottom surface and a top surface, the top surface is adapted to contact a temperature-controlled top plate; and

the showerhead electrode includes an exposed bottom surface and a top surface, the top surface of the showerhead electrode contacts and is bonded to the bottom surface of the graphite backing plate with a thermally and electrically conductive bonding material.

34. (Previously Presented) The component of Claim 10, wherein each T-nut includes a rectangular shaped head and a cylindrical shaped shaft extending axially from a surface of the head and received in a round hole defined by the first portion of the aperture, the second portion of each of the apertures is shaped to mate with the head of the T-nut.

35. (Previously Presented) The component of Claim 34, wherein the surface of the head of each of the T-nuts is bonded with an elastomer to a surface that at least partially defines the second portion of the respective aperture.

36. (Currently Amended) The component of Claim 10, wherein:
the ~~first~~ second surface of the backing plate is bonded to the attachment surface of the showerhead electrode with a thermally and electrically conductive bonding material; and

the ~~second~~ first surface of the backing plate contacts a temperature-controlled top plate.

37. (Previously Presented) The component of Claim 17, wherein each T-nut includes a rectangular shaped head and a cylindrical shaped shaft extending

axially from the bearing surface of the head and received in a round hole defined by the first portion of the aperture.

38. (Previously Presented) The component of Claim 37, wherein the second portion of each of the apertures is shaped to mate with the head of the T-nut mounted therein, and the bearing surface of each of the T-nuts is bonded with an elastomer to the surface that at least partially defines the second portion of the respective aperture.

39. (Previously Presented) The component of Claim 17, wherein the graphite backing member includes a first surface and a second surface opposite the first surface, the first surface contacts and is bonded with an elastomer to a surface of the showerhead electrode opposite the plasma exposed surface, and the second surface is adapted to contact a temperature-controlled top plate.

40. (Currently Amended) A component of a plasma processing apparatus, comprising:

~~a first~~ an electrode plate of an electrically and thermally conductive material, the ~~first~~ electrode plate including a top surface and an exposed bottom surface adapted to be exposed to an interior of a plasma processing chamber;

a ~~second~~ backing plate of a ~~brittle, electrically and thermally conductive~~ graphite material, the ~~second~~ backing plate including a bottom surface and a top surface spaced from the bottom surface, the bottom surface of the ~~second~~ backing plate contacting and bonded to the top surface of the ~~first~~ electrode plate, the ~~second~~ backing plate including axially extending apertures extending between the top

surface and the bottom surface thereof, each of the apertures including a first second portion opening in the bottom surface and a ~~second~~ first portion opening in the top surface of the ~~second~~ backing plate, the ~~first~~ second portion being wider in a transverse direction than the ~~second~~ first portion; and

a plurality of fastener members each mounted in an aperture of the ~~second~~ backing plate, each fastener member including a head configured to prevent rotation of the fastener member in the aperture and having a bearing surface ~~facing~~ bonded to a surface that at least partially defines the second portion of the aperture.